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Course - CSI - ~~227~~ 227. (Algorithm)

Dept. - CSE (EV)

Answer to the Question No - 1

@ Ans: As we study Algorithms, we can learn analysis that allow us to Compare and Contrast Solutions based solely on their own Characteristics not the Characteristics of the program or Computers used to Implement them. Computer Scientists lear by Experience, we learn by Seeing Others Solved problems and by Solving problems by Ourselves. Being Exposed to different problem- ~~Solv~~ Solving techniques and how Different Algorithms are desinged helps us to take on the next challenging problm that we are given.

Applications of the Algorithms: ⇒ ~~Fi~~ Here we will see Some of the practicale of the Algorithem.

⇒ First, we will Start with the Internet wich is very much Important for Our Daily life and we Cannot even Imagine Our life with Out the internet and it is the Out income of clever and Creative algorithems. Numerous sites on the Internet Can Oparat and falsify this huge number of Data. only with the helpe

P.t.O.

⇒ The everyday Electronic Commerce Activities are massively Subject to our data, for Example, Credit or debit Card Numbers, passwords OTPs, and Many More. The centre technologies Used Incorporate public-key cry.phocurrency And Digital Signatures which depend On mathematical Algorithms.

⇒ Even an Application that doesn't need Algorithm Content at the Application level depends vigorously on the algorithm as the Application relies upon Hardware, GUI, Networking, or Object Direction and all of thes create a substantion us of Algorithm.

⇒ There are some others vital use case where the Algorithm has been used such as it we watch any video on youtube then Next time we will get related-type Advice as recommended videos for us.

2/ (b) Answer: (3)

Data flow Analysis is a process for collecting information About the use definition, and dependencies of Data in program.

The Data flow Analysis Algorithms operates on a CFG generated from an AST. you can use a CFG to Determine the part of a program to wich a particular value Assigned to a variable might propagate.

Data flow Analysis is a technique for gathering information About the possible set of values calculated at various points in a Computer program. A programs control flow graph (CFG) is used to determine thoes part often used of Compilers when Optimizing a program. A canonical Example of Dat- flow Analysis is Reaching definitions. A simple way to perform data-flow Analysis of program is to setup data flow Equation.

Reaching Definition Analysis: This Analysis tracks the definition Of variable on Expression And Determine the point in the program. where the definition "reaches" a particular the point of the variable Expression. The Information can be used to Identify variable that can be safely optimized on eliminited.

P.t.o.

Difference Between Algorithm And pseudo code :

Algorithm	pseudo code.
→ It is a step-by-step description the Solutions.	→ It is an easy way of writing algorithm for users to understand.
→ It is always a real Algorithm a not fake Codes.	→ These are fake codes.
→ They are sequence of solution to a problem.	→ They are representations of Algorithm
→ ~~They are~~ It is a systematically written Code.	→ The are simpler ways of writing Codes.
→ They are an unambiguous way of writing Codes.	→ The are method of describing code written in an Algorithm.
→ The can be Considered ~~pseu~~ pseudo code.	→ They can not considered Algorithm.
→ They are no Rules to writing Algorithms.	→ Certain rules to writing pseudo code are then.

1

(c) Answer: Types Of Algorithms: Here is 7 types of Algorithm — 5

① Brute force Algorithm.
② Recursive Algorithm.
③ Dynamic programming Algorithm.
④ Divide and Conquer Algorithm.
⑤ Greedy Algorithm.
⑥ Backtracking Algorithm.
⑦ Randomized Algorithm.

Greedy Algorithm: A greedy Algorithm is an approach for Solving a problem by Selecting the best option available at the moment. It doesnot worry whether the current best result will bring the overall optimal result. This Algorithm reverses the earlier decision even if the Choice is Working in a top-down approach.

There are few variation of the greedy Algorithm —

→ pure greedy Algorithm —
→ Orthogonal greedy Algorithm —
→ Relaxed greedy Algorithm.

Answer to the Question No - 2

2

(a) Answer: Searching Algorithms: In Computer Since Search Algorithm is an Algorithm - designed to solved a Search problem - Search Algorithm work to retrieve information stored within particular Data Structure or Calculated in the search space of a problem Domain, with either discrete or continuous values.

Sorting Algorithm: In Computer Science, a Sorting Algorithm is an Algorithm that puts elements of a list into an Order. The most frequently used orders are Numerical order And Lexicographical orders and Either Ascending or descending. A ~~the~~ Sorting Algorithm is used to rearrange a given array or list of Element According to a Comparison Operator on the Elements. The Comparison Operator is used to decide the new order of Elements in the Respective data Structure.

-1	0	1	2	4	8

Array sorted in in creasing order.

2

(b) Answer: Function an Algorithm: An Algorithm is a recipe or Description of mechanical set of step for performing some task. (7)

A function is any relationship btween inputs and Outputs in which each input leads to Exactly on Output. It is possible for a function to have more then one input to that yields that same output.

⇒ Fuction in Algorithm:

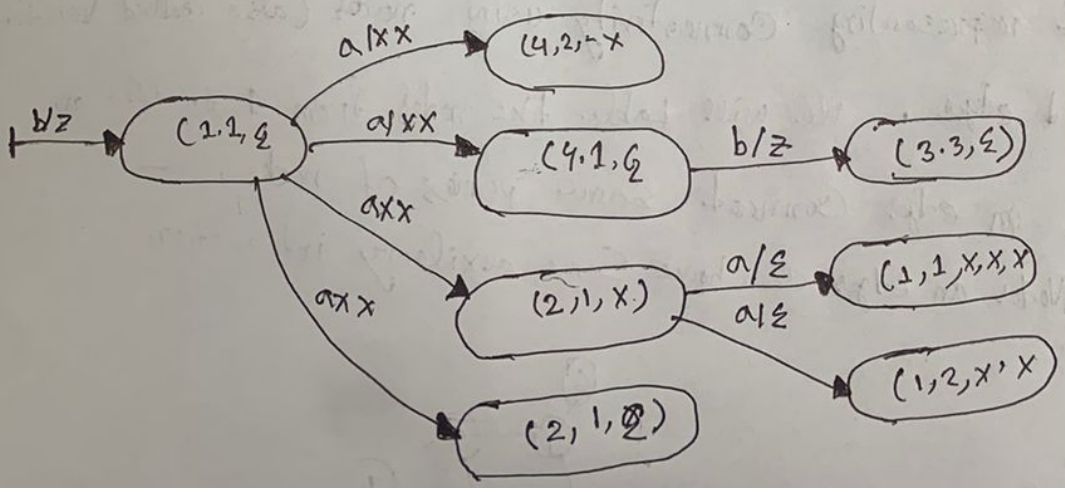
→ First define the problm you want the Algorithm to Solved ...

→ Break the problm down into Smaller, manageable steps...

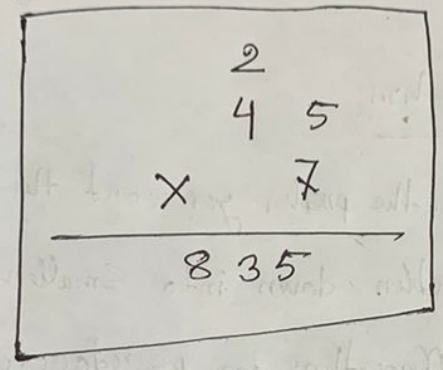
→ write your Algorithm in pseudocode or programming Language.

→ Test your Algorithm to make Sure it is correct and efficient ....

→ optimize the Algorithm.



2/ (c) **Answer: Mathmatical Algorithms** An algorithm in math is a procedure, a description of a set of steps that can be used to solved a mathmatical computation, for example, a step by step procedure used in long division is common example of a mathmatical Algorithm.



Graph Algorithm: Graph algorithm are a set of instruction that traverse graph, some algorithms, are used to find a specific node or the path between two given nodes. An abstract way of representing connectivity using nodes (also called vertices) and edges. We will Lable the nodes from 1 to n.

An edges connect some pairs of nodes.

Nodes an edges can have some auxiliary information.

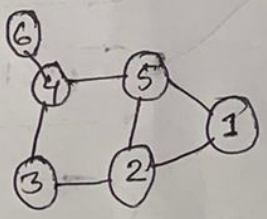


Fig: Graph Algorithm.